

SUPPLEMENTAL REISSUE DECLARATION

As the below named inventors, we hereby declare as follows:

That our names, residence and citizenship are as indicated below;

That we have reviewed and understand the contents of the attached reissue application including original claims 1-14 and the newly submitted claims 15-26;

That we acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a);

That we verily believe that we are the original, first and only joint inventors of the invention described and claimed in United States Patent No. 5,496,150 entitled "Field-Serviceable Solids-Handling Vertical Turbine Pump" and in the foregoing specification for which invention we respectfully solicit a reissue patent;

That we do not know and do not believe that the same invention was ever known or used before our invention or discovery thereof; or patented or described in any printed publication in any country before our invention or discovery thereof, or more than one (1) year prior to the filing of our original application for United States Letters Patent No. 5,496,150 of which that is an application for reissue; or in public use or on sale in the United States of America for more than one (1) year prior to the filing of the original application; that the invention has been patented or made the subject of an inventor's

certificate issued before the date of the original application in any country foreign to the United States of America on an application filed by me or my legal representatives or assignees more than twelve (12) months prior to said original application and that no application for patent or inventor's certificate have been filed by me or my legal representatives or assignees in any country foreign to the United States of America before the application of the original patent;

That we verily believe that there are errors in the original patent which make such original patent partially inoperative by reason of claiming less than we had a right to claim and that such errors occurred without any deceptive intent;

That the original application was directed to a vertical turbine pump having numerous components thereof. That the vertical turbine pump was in part concerned with effectively handling solids-laden liquids and exhibiting favorable hydraulic efficiency. That the vertical turbine pump was also in part concerned with eliminating pressure pulsations and accompanying rough operation. That the vertical turbine pump of the original application was also in part concerned with being readily serviced in the field. To realize all of these objectives, the vertical turbine pump of the invention includes a plurality of diffuser vanes, specific impeller vanes and a bearing separably fastenable within the diffuser core.

That while we originally recognized the importance of each of these aspects of the invention, we did not understand the importance of claiming and thus, when the original

application was prepared, we failed to recognize that not all of the details required for realizing all of the aspects were needed and thus, we failed to recognize that the more basic concepts of the invention disclosed in the specification were not covered by the original claims.

That this lack of adequately claiming the invention was due in part to the numerous structural features that were part of the preferred embodiment of our particular pump, without considering how to broadly recite a particular aspect of our pump.

We communicated directly with the attorneys in preparing the application. We had a preliminary search conducted on this application prior to the preparation thereof. This search was concerned with all features of the vertical turbine pump of the invention. We did not advise the U.S. attorneys, and accordingly, they did not fully recognize, that varying levels of importance of each of the aspects of the invention. That we, while realizing that the various descriptions of the pump bowl assembly, the diffuser, the drive shaft and the rotary impeller were those of a preferred embodiment of our invention, and that the removable bearing was useful for improving serviceability of many types of pumps, did not realize the importance of claiming less significant aspects of our invention in a general sense to provide us with the broadest possible protection of our invention to which we are entitled. That we, while recognizing the relative significance of each of the aspects of the invention, did not understand the importance of claiming and thus, we did not realize that we had claimed less than we were entitled to.

That when we executed the Declaration of the original application, we reviewed the application carefully for accuracy, but did not recognize the importance of broadly presently other less significant aspects of the invention and the claims or that individual aspects could be claimed alone. That it was not until after the original Letters Patent issued that we discovered the importance of claims and discovered that the original presented claims did not adequately define our invention.

That for this reason, there was an error in the original patent claims which rendered the original patent partially inoperative by failure to adequately claim these aspects of our invention;

That, more specifically, with respect to claim 1, the errors include specific recitation of the details of the pump bowl assembly, the diffuser core, the rotary impeller, the three stationary diffuser vanes and the bearing cartridge. That, more specifically, with respect to claim 6, the errors include specific recitation of the axially spaced bearings within a bearing cartridge which surround and rotatably support the drive shaft.

That with respect to claims 1 and 6, new independent claims 15, 20, and 26 respectively, have been presented either to resolve the errors described above by presenting claims which are directed to a pump including broadly claimed pump assembly, diffuser core, rotary impeller and without the recitation of the diffuser vanes, and with the functional relationship of the bearing. The other claims 16-17, 19, and 25 depend from claim 15 and recite further details relevant to the aspect regarding which claim 15 is narrower than the original claim 1 and claims 21, 22 and 24 present similar

limitations as to which claim 20 is narrower in that respect to our original claim 6 of the original application.

In summary, claims 1-14 are inadequate to protect out invention as these claims do not encompass the more basic concept of our readily removable bearing cartridge now recited in independent claims 15, 20, and 26. This inadequacy of claims 1-14 requires the addition of claims 15, 20 and 26. Claim 15 is specifically directed to a vertical turbine pump including a pump assembly having a casing, a diffuser core disposed in the casing, a drive shaft extending through the diffuser core, a rotary impeller fastened to an upstream end of the drive, and a bearing separably fastened to the casing, the bearing surrounding and rotatably supporting the drive shaft, the bearing cartridge being removable from an upstream section of the casing by removing the impeller and disengaging the bearing cartridge from the casing thereby permitting the bearing cartridge to be slid off the drive shaft in an axial direction. Claim 20 is specifically directed to cover an apparatus for facilitating servicing of a bearing from an upstream end of a vertical turbine pump incorporating a pump assembly including a casing, a diffuser core disposed in the casing, a drive shaft extending through the diffuser core, and a rotary impeller fastened to an upstream end of the drive shaft, the apparatus including a bearing cartridge including an elongated housing having a bearing disposed therein, the bearing cartridge separably fastened to the casing, the bearing cartridge surrounding and rotatably supporting the drive shaft, the bearing being removable from an upstream end of the casing by removing the impeller and disengaging the bearing cartridge from the

casing thereby permitting the bearing cartridge to be slid off the drive shaft in an axial direction. Thus claims 15 and 20 have a broader scope than the prior claims regarding the details of the pump and the structure of the bearing within the cartridge that is necessary to cure the inadequacies of claims 1-14 to recite the basic concept regarding the bearing cartridge readily removable from an upstream portion of the casing.

Claims 16-17, 19, 25 and 21, 22 and 24 are all directly or indirectly dependent from claims 15 and 20, respectively. Each of these claims is necessary to further define the basic element of the invention recited in the independent claims.

Dependent claims 16 and 21 depend on claims 15 and 20, respectively, and further recite that "wherein an only active element removed to allow removal of said bearing is said impeller, and wherein active element refers to an element that is actively rotated or otherwise actively moved by said drive shaft when the vertical turbine pump is on." This limitation serves to further emphasize how few active elements need to be removed in order to access the bearing, contrary to the conventional downstream access to the bearing. This limitation thus supplements the limitations of the independent claims and is believed necessary to comprehensively protect our invention. Claims 16 and 21 are not equivalent in scope to any of claims 1-14.

Dependent claims 17 and 22 depend on claims 15 and 20, respectively, and further recite that "wherein said bearing cartridge is further separably fastenable within said diffuser core." This limitation serves to further emphasize how the bearing is readily removable. This limitation thus supplements the limitations of the independent claims

and is believed necessary to comprehensively protect our invention. Claims 17 and 22 are not equivalent in scope to any of claims 1-14.

Dependent claims 19 and 24 depend on claims 15 and 20, respectively, and further recite that "said bearing cartridge assembly includes an engagement structure integral thereon and said diffuser core includes a reciprocal engagement structure therein for receiving the engagement structure of said bearing cartridge." This limitation serves to further emphasize how the bearing cartridge is readily removable. This limitation thus supplements the limitations of the independent claims and is believed necessary to comprehensively protect our invention. Claims 19 and 24 are not equivalent in scope to any of claims 1-14.

Dependent claim 25 depends on claim 15 and further recites that "wherein said bearing cartridge is a sleeve-type bearing." This limitation serves to further define a particular type of bearing particularly useful for the invention. This limitation thus supplements the limitations of independent claim 15 and is believed necessary to comprehensively protect our invention. Claims 15 is not equivalent in scope to any of claims 1-14.

Independent claims 1 and 6 have been amended to further recite details of the bearing cartridge, specifically to further recite that the bearing cartridge is removable from an upstream section of the casing by removing the impeller and disengaging the bearing cartridge from the casing thereby permitting the bearing cartridge to be slid off the drive shaft in an axial direction. This limitation serves to further emphasize how the

bearing cartridge is readily removable. This limitation thus further limits the scope of the original independent claims and is believed necessary to comprehensively protect our invention, particularly in view of newly applied art.

Independent claim 26 is a combination of claims 6, 7 and 10 and provides independent protection for the tubular adapter of claim 10 without the above-mentioned amendments to claim 6. This additional claim is believed necessary to comprehensively protect our invention.

Upon review of the prior art cited during the examination of the original application, and the further documents submitted herewith, we do not believe that any of documents disclose or suggest the invention as set forth in any of the claims 1-17, 19-22 and 24-26, and that we are entitled to the more comprehensive protection offered by the added claims 15-17, 19-22 and 24-26. As such, we believe that all of claims 15-17, 19-22 and 24-26 are necessary to protect our invention with claims of varying scope, and to correct for the insufficiencies of claims 1-14.

Applicants hereby offer to surrender the original Letters Patent No. 5,496,150.

WHEREFORE, the Petitioners hereby offer to surrender, upon the allowance of said application, the original Letters Patent No. 5,496,150 and prays that Letters Patent be reissued to Petitioners for the invention of patent claims 1-14 with the newly presented claims 15-17, 19-22 and 24-26;

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The undersigned declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize validity of the application or any reissue patent issuing thereon.

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Ernest J. Claxton III

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